Operating Manual

iANT100, iANT101

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Document Number **314666** (See Last Page for Revision Details)

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Extronics reserve the right to change this manual and its contents without notice, the latest version applies.

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1 Introduction

1.1 Antenna Profile

The iANT100 and iANT101 are increased safety antennas and have been designed and approved by ATEX and IECEx for use in Zone 1 / 21 & Zone 2/22 Hazardous Area Environments.

The iANT100 and iANT101 are optimised for use in WLAN installations in the 2.4GHz and 5 GHz spectrums for IEEE802.11 a/b/g wireless networks or 2.4GHz and 5GHz wireless MESH Ethernet networks.

These devices can be used with explosion proof Access Points such as the Extronics iWAP101 iWAP103 or an Access Point installed in a safe area and just the antenna installed in the hazardous area.

The units are explosion protected in accordance with IEC 60079-0:2007-10 edition 5, IEC 60079-31:2008 edition 1, IEC60079-7:2006-07 edition 4, EN 60079-0:2009, EN 60079-7:2007.
The device is certified as:
II 2 GD
Ex e IIC T6 Gb (T_a = -40℃ to 60℃)
Ex t IIIC T85℃ Db IP66 .
It can operate in areas classified as Zone 1, gas and dust with a temperature class of T6 with a maximum temperature of 60^{o}C

The minimum permissible ambient temperature is -40^{o}C
The maximum permissible ambient temperature is 60^{o}C

2 Safety Information and Notes

2.1 Storage of this Manual

Keep this user manual safe and in the vicinity of the antenna. All persons who have to work on or with the controller should be advised on where the manual is stored.

2.2 List of Notes

The notes supplied in this chapter provide information on the following.

- Danger / Warning.
  - Possible hazard to life or health.
- Caution
  - Possible damage to property.
- Important
  - Possible damage to the device, or associated equipment.
- Information
  - Notes on the optimum use of the device

Warning!	**The iANT100/iANT101 enclosure is an electrostatic charging hazard; clean only with a damp cloth**

Important	**The iANT100/iANT101 may be used in zones 1 and 2 with flammable gases and vapours with apparatus groups IIA, IIB & IIC and with all temperature classes.**

Important	**The iANT100/iANT101 may also be used in zones 21 and 22 with all flammable dusts compatible with the maximum surface temperature of 60°C. The appropriate safety margin should be applied**

Important	**The iANT100/iANT101 is only certified for use in ambient temperatures in the range -40°C to +60°C and should not be used outside this range**

Important	**The equipment has not been assessed as a safety-related device (as referred to by Directive 94/9/EC Annex II, clause 1.5**

Important	**Installation of this equipment shall be carried out by suitably trained personnel in accordance with the applicable code of practice (EN 60079-14).**

Important	**If terminated in the hazardous area, the flying lead shall be installed in an appropriately-certified enclosure. An example would be termination inside a flameproof enclosure via a suitable certified flameproof gland.**

Important	**The iANT100/iANT101 and associated wiring should be periodically inspected for damage, in accordance with the applicable code of practice (EN 60079-17)**

Important	**Repair of the iANT shall only be carried out by the manufacturer: The antenna contains no user-serviceable parts**

Warning	**The maximum radiated power shall not exceed 2 W**

3 General information

3.1 Installation and Function

3.1.1 Parts Enclosed

iANT100

- 1 x Antenna with 1mtr / 5mtr cable
- 1 x M6 x 10 slotted machine screw
- 1 x M6 lock washer
- 1 x Antenna Bracket
- 2 x 1 ¼" x 8 Wood Screws
- 2 x 6mm red rawl plugs
- 2 x self adhesive nylon blocks
- 2 x cable ties

iANT101

- 1 x Antenna with Cable as Ordered
- 1 x Antenna Pipe Mounting Bracket

If any Part is damaged or missing, contact Extronics Ltd

Warning	**Ensure that the M6 screw used to affix the iANT100 antenna does not protrude more than 10mm into the antenna through the attachment bracket. Protrusion greater than 10mm will cause damage to the antenna.**

3.1.2 Antenna Installation Recommendations

It is recommended that the antennas be mounted at least 204mm (8") away from any metal objects e.g. metal clad walls or girders.
The antennas should be mounted at least 600mm (24") apart for optimal performance, but will perform well closer together.

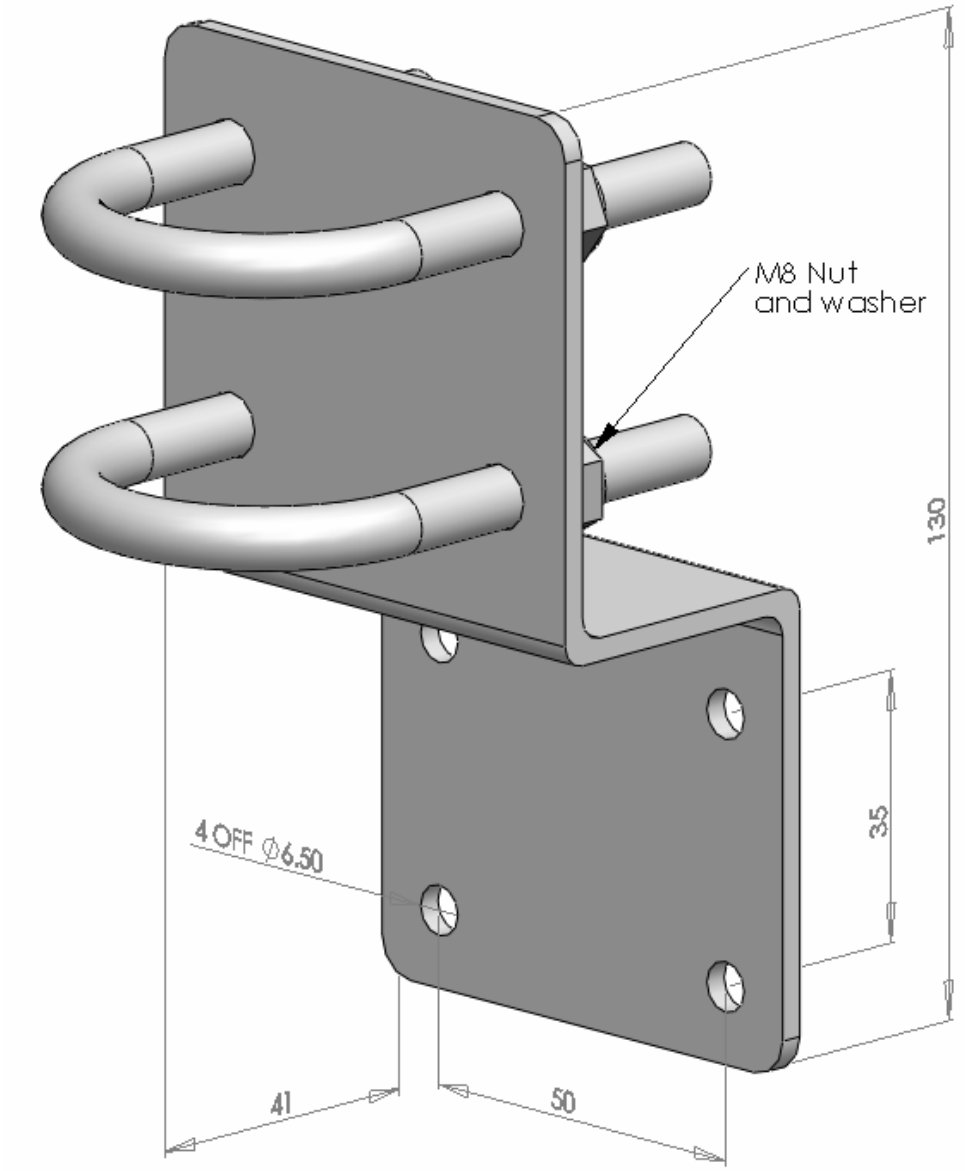
Information	**The iANT100 has optional brackets which allow the antenna to be mounted directly to Extronics Range of hazardous area access points**

Information	**The iANT101 is supplied with a pipe mounting bracket**

3.2 Optional Accessories

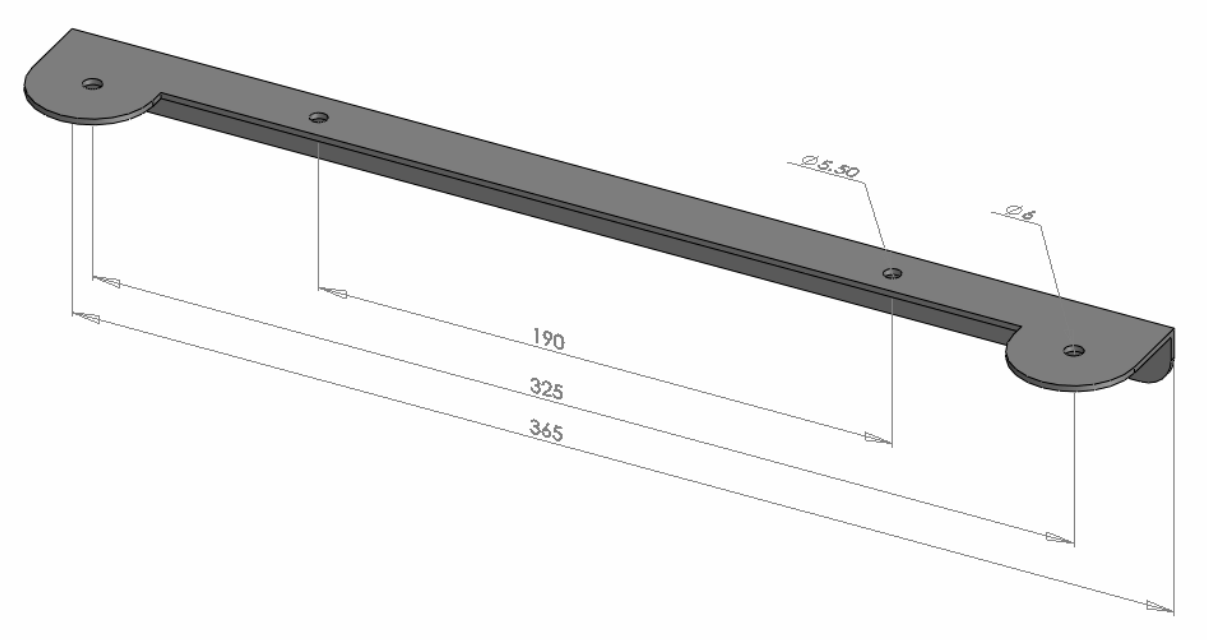
3.2.1 iANTMB01

316L Stainless steel wall mount bracket assembly for iANT101



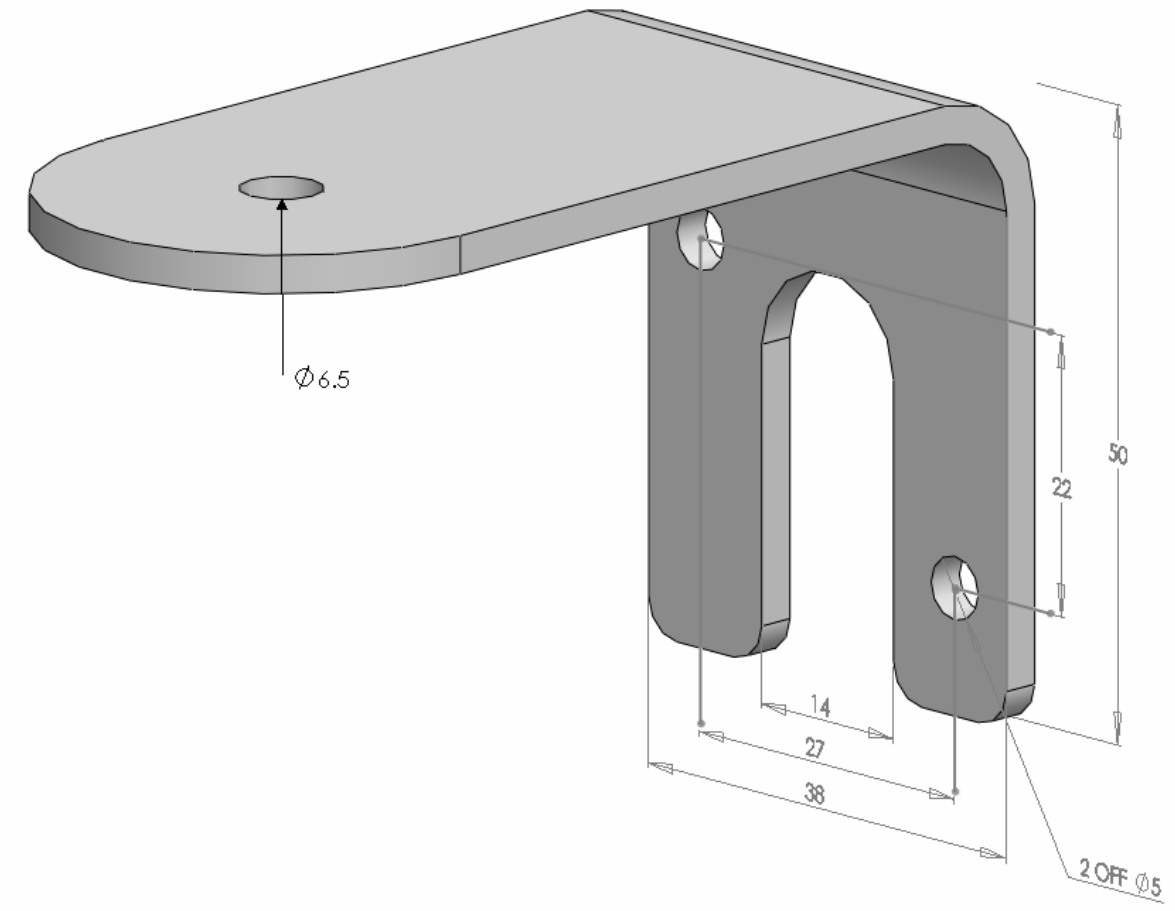
3.2.2 iANTMB02

316L SS Antenna bracket 365mm length for 2 iANT100 / iANT200 antennas for mounting on an iWAP enclosure



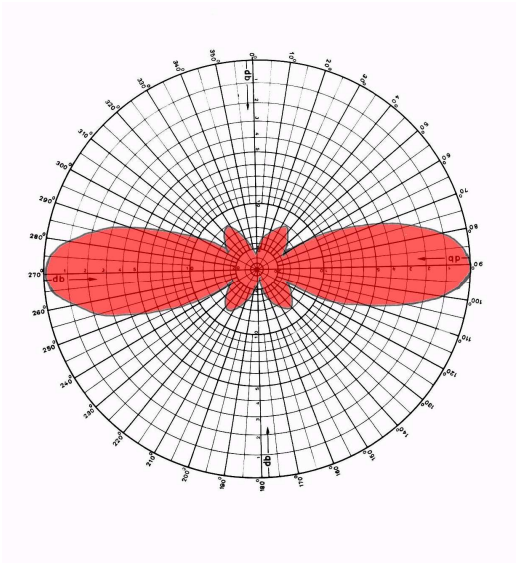
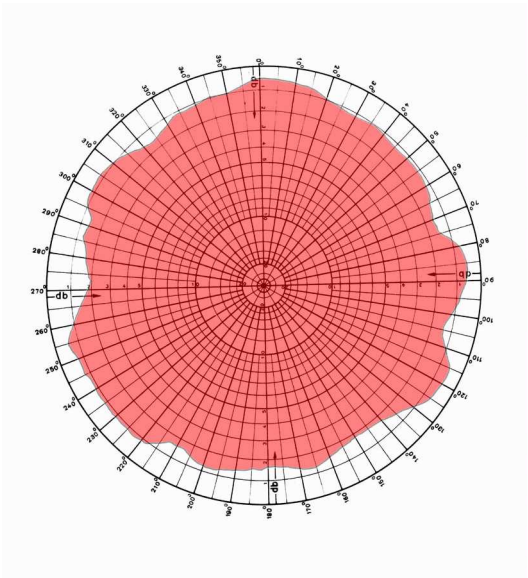
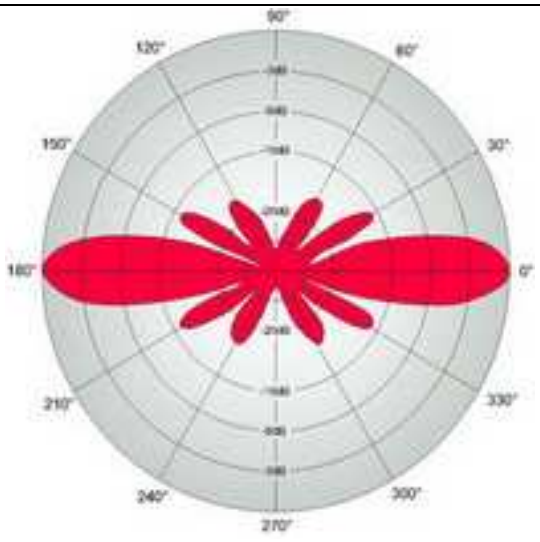
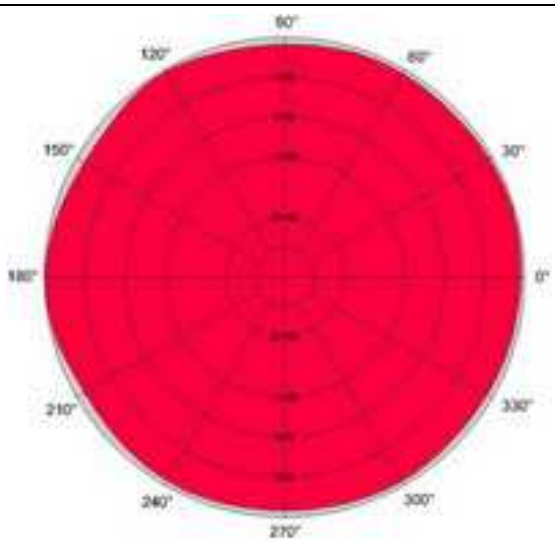
3.2.3 iANTMB03

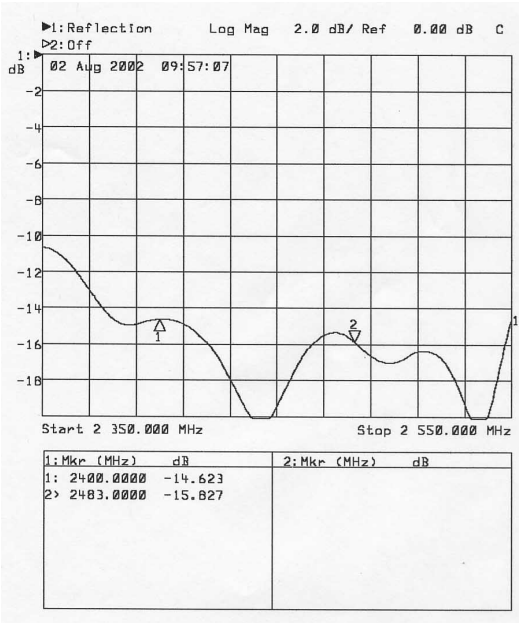
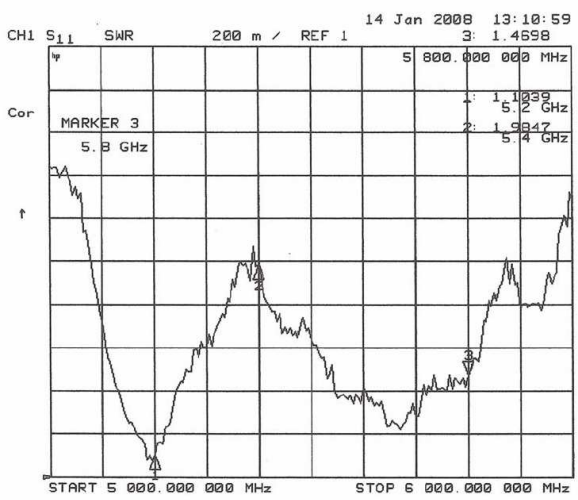
316L Stainless Steel wall mount bracket for iANT100 & iANT200



4 Technical Specification

4.1 iANT100 and iANT101 Plots

2.4GHz **E Plane Pattern Vertical Free Space Beamwidth** **Approx 40°**	**2.4GHz** **H Plane Pattern Vertical Free Space Beamwidth** **Approx 40°**
	
5GHz **E Plane Pattern Vertical Free Space Beamwidth** **Approx 40**	**5GHz** **H Plane Pattern Vertical Free Space Beamwidth** **Approx 40°**
	

2.4GH (VSWR) Plot Voltage Standing Wave Ratio <:1 Over 2400—2483 MHz	5GHz(VSWR) Plot Voltage Standing Wave Ratio <:1 Over 5000—6000 MHz
	

4.2 iANT100 Specifications

Parameter	iANT100-24	iANT100-58
Power	Max power 1 Watt continuous	Max power 1 Watt continuous
Dimensions	210mm Length, 38mm Diameter	210mm Length, 38mm Diameter
Weight	350g	350g
Connections	Reverse Polarity BNC (Other connector types available on request)	Reverse Polarity BNC (Other connector types available on request)
Cable Sealed Lead Length	Supplied as 1 or 5 metre	Suitable for Supplied as 1 or 5 metre
Centre Frequency	2.45 GHz	Suitable for Bands A, B and C
Bandwidth	100MHz	Bands A, B and C
Impedance	50 Ohms	50 Ohms
Return Loss	Better than –12 dB over bandwidth	Better than –12 dB over bandwidth
Gain	5 dBi	8 dBi
Radiation Pattern	Omni Directional	Omni Directional
Radiator Element	Brass tubing, copper plated steel rod	PCB and Brass tubing.
Ambient Temperature	-40°C to 60°C	-40°C to 60°C
IP Rating	IP66	IP66
Certification Number	Sira 11ATEX3100X IECEx SIR 11.0045X	Sira 11ATEX3100X IECEx SIR 11.0045X
ATEX Certification	II 2GD Ex e IIC T6 Gb (Ta = -40°C to +60°C) Ex t IIIC T85°C Db IP66	II 2GD Ex e IIC T6 Gb (Ta = -40°C to +60°C) Ex t IIIC T85°C Db IP66
IECEx Certification	Ex e IIC T6 Gb (Ta = -40°C to +60°C) Ex t IIIC T85°C Db IP66	Ex e IIC T6 Gb (Ta = -40°C to +60°C) Ex t IIIC T85°C Db IP66

4.3 iANT101 Specifications

Parameter	2.4GHz	5.8GHz
Power	Max power 1 Watt continuous	Max power 1 Watt continuous
Dimensions	250mm Length, 38mm Diameter	250mm Length, 38mm Diameter
Weight	480g Not including Cable	480g Not including Cable
Connections	Please Specify with Order	Please Specify with Order
Centre Frequency	2.45 GHz	Suitable for Bands A, B and C
Bandwidth	100MHz	Suitable for Bands A, B and C
Impedance	50 Ohms	50 Ohms
Return Loss	Better than –12 dB over bandwidth	Better than –12 dB over bandwidth
Gain	5 dBi @ 2.4 GHz	8 dBi @ 5.8 GHz
Radiation Pattern	Omni Directional	Omni Directional
Radiator Element	Brass tubing, copper plated steel rod	PCB and Brass Rod
Ambient Temperature	-40°C to 60°C	-40°C to 60°C
IP Rating	IP66	IP66
Certification Number	Sira 11ATEX3100X IECEx SIR 11.0045X	Sira 11ATEX3100X IECEx SIR 11.0045X
ATEX Certification	II 2GD Ex e IIC T6 Gb (Ta = -40°C to +60°C) Ex t IIIC T85°C Db IP66	II 2GD Ex e IIC T6 Gb (Ta = -40°C to +60°C) Ex t IIIC T85°C Db IP66
IECEx Certification	Ex e IIC T6 Gb (Ta = -40°C to +60°C) Ex t IIIC T85°C Db IP66	Ex e IIC T6 Gb (Ta = -40°C to +60°C) Ex t IIIC T85°C Db IP66

4.4 iANT101 Cable Loss

As cable length increases the loss in dB increases

Loss with 1M lead @ 2.4 GHz	0.22 dB
Loss with 2M lead @ 2.4 GHz	0.44 dB
Loss with 5M lead @ 2.4 GHz	1.10 dB
Loss with 10M lead @ 2.4 GHz	2.20 dB
Loss with 15M lead @ 2.4 GHz	3.30 dB
Loss with 20M lead @ 2.4 GHz	4.40 dB
Loss with 1M lead @ 5.8 GHz	0.36 dB
Loss with 2M lead @ 5.8 GHz	0.72 dB
Loss with 5M lead @ 5.8 GHz	1.80 dB
Loss with 10M lead @ 5.8 GHz	3.60 dB
Loss with 15M lead @ 5.8 GHz	5.40 dB
Loss with 20M lead @ 8.8 GHz	7.20 dB

5 Intended Purpose Usage

5.1 Transportation and Storage

All iANT devices must be so transported and stored that they are not subjected to any excessive mechanical stresses.

5.2 Cleaning and Maintenance

The iANT and all its components require no maintenance and are self-monitoring. All work on the iANT100 or iANT101 by personnel who are not expressly qualified for such activities will cause the Ex approval and the guarantee to become void.

Warning!	**The iANT100 and iANT101 enclosures are an electrostatic charging hazard; clean only with a damp cloth**

6 Fitting of Exd Antenna Cable Gland on iANT100

These instructions are intended only for when the iANT100 is to be used with the iWAP range of enclosures For Full installation instruction also refer to Pepper CR-U assembly Instructions

Figure 1

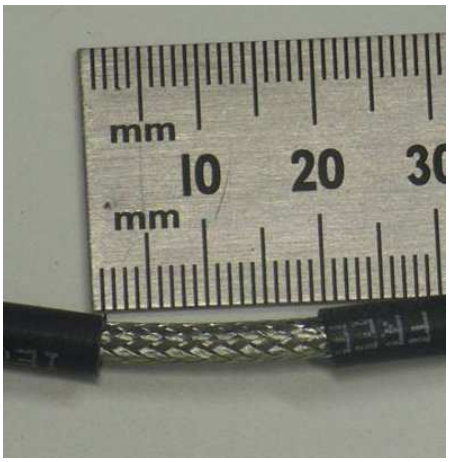


Figure 2

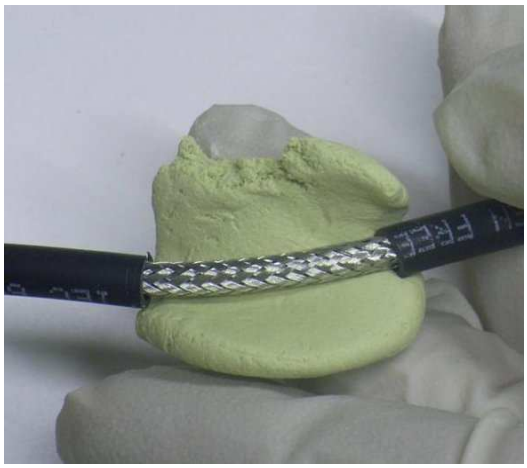


Figure 3

Figure 4

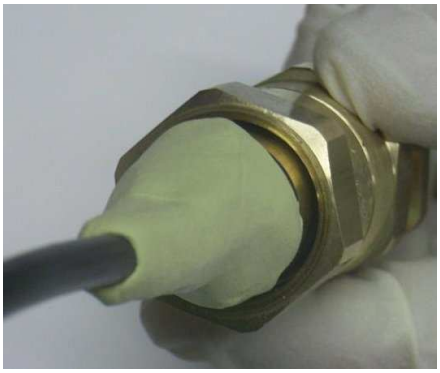


Figure 5

Figure 6

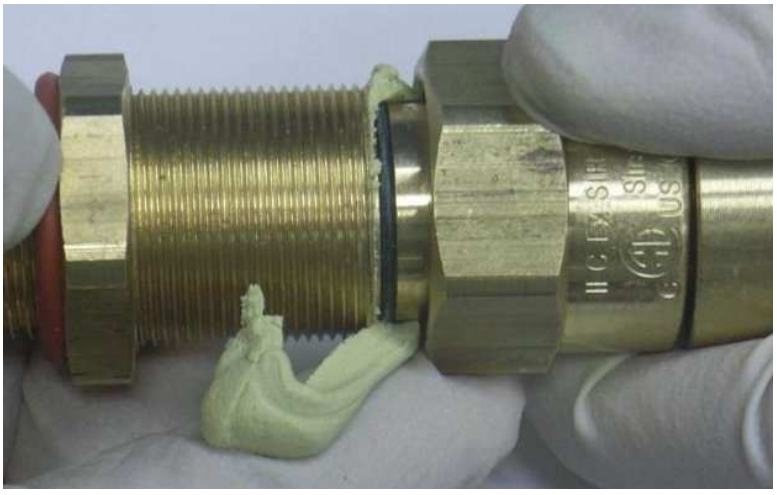


Figure 7

Figure 8

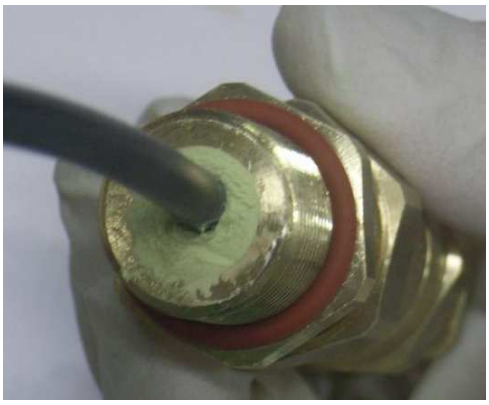


Figure 9

1. Split gland as Shown in Figure 1
2. Fit Entry Body into the iWAP enclosure. Hand-tighten, then using wrench tighten a further ½ turn. DO NOT EXCEED MAX TORQUE FOR ENCLOSURE
3. Slide Rear Assembly (Back Nut, Mid Cap and Union Nut) onto cable.

CABLE PREPARATION

1. Cut around circumference of cable, being careful not to cut into braid.
2. Slide cable sheath to expose 20-25mm of braid as shown in figure 2.
3. Check compound has not passed its "Use By" date..**Note** Installation at temperatures below 10°C should be avoided.
4. Trim any hardened pieces from ends of stick. Mix the compound by rolling, folding and breaking. Ease mixing by cutting large sticks in half. Fully mixed compound has a uniform yellow colour with no streaks.
5. Support the cable and Rear Assembly, holding them roughly concentric. Starting at the middle, pack a small amount of compound around the screen of the cable as shown in figure 3. Pressing and working the compound into the braid.
6. Pack Compound around the cable to completely fill the Rear Assembly cup. Build up compound around the outside of the cores, with a slight taper & to approximately 40mm in length, as shown in figure 4
7. Pass the cable through and push compound into Entry Body until Rear Assembly engages. Remove squeezed out compound as Screw Union full turns onto Entry Body. Ensure that compound emerges at entry thread, as per figures 7 and 8.
8. Clean off excess compound from Entry Body to allow withdrawal when cured, as shown in figure 9.
9. Leave to cure for a minimum of 4 hours when working at 21ºC
10. To release and pull back joint for inspection, unscrew Union Nut
11. Hand-tighten Union Nut to remake joint. Then refer to table below and tighten Union Nut using wrench to the given amount. Hold Mid Cap with wrench and tighten Back Nut onto cable. Ensure seal makes full contact with cable sheath, then tighten 1 extra turn
12. The equipment should not be energised until the compound has been left to cure for at least 4 hours when working at 21ºC. See chart ‘Energising Time vs. Temperature’ for further guidance

HEALTH AND SAFETY WARNING

The resin used in the compound can cause eye and skin irritation. For your personal protection, wear the gloves supplied while mixing and applying. The uncured compound should not be allowed to come into contact with foodstuffs.

A COMPREHENSIVE SAFETY DATA SHEET PROVIDED BY THE COMPOUND MANUFACTURER IS AVAILABLE ON REQUEST

7 ATEX & IECEx CERTIFICATION

1 **EC TYPE-EXAMINATION CERTIFICATE**

2 Equipment intended for use in Potentially Explosive Atmospheres Directive 94/9/EC

3 Certificate Number: **Sira 11ATEX3100X** Issue: **0**

4 Equipment: **iANT10x xx.xx xHz Omni-Directional Antenna**

5 Applicant: **Extronics Ltd**

6 Address: Meridian House
Roe street
Congleton
Cheshire, CW12 1PG
UK

7 This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 Sira Certification Service, notified body number 0518 in accordance with Article 9 of Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in the confidential reports listed in Section 14.2.

9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the schedule to this certificate, has been assured by compliance with the following documents:

EN 60079-0:2009 EN 60079-7:2007 IEC 60079-31:2008

10 If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

11 This EC type-examination certificate relates only to the design and construction of the specified equipment. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment.

12 The marking of the equipment shall include the following:

II 2GD
Ex e IIC T6 Gb Ta = -40°C to +60°C
Ex t IIIC T85°C Db IP66

Project Number 24353

D R Stubbings BA MIET
Certification Manager

This certificate and its schedules may only be reproduced in its entirety and without change.

Sira Certification Service
Rake Lane, Eccleston, Chester, CH4 9JN, England
Tel: +44 (0) 1244 670900
Fax: +44 (0) 1244 681330
Email: info@siracertification.com
Web: www.siracertification.com

Form 9404 Issue 1

SCHEDULE

EC TYPE-EXAMINATION CERTIFICATE **Sira 11ATEX3100X**
Issue 0

13 **DESCRIPTION OF EQUIPMENT**

The antenna comprises a single, copper-plated, steel conductor running along the axis of a cylindrical housing that is made from a non-conducting plastic, the central conductor acts as a radiating element for the transmission of radio frequency radiation. The antenna is supplied with an integral flying lead of co-axial cable

14 **DESCRIPTIVE DOCUMENTS**

14.1 **Drawings**

Refer to Certificate Annexe.

14.2 **Associated Sira Reports and Certificate History**

Issue	Date	Report number	Comment
0	03 March 2011	R24353A/00	The release of the prime certificate.

14.3 Certificate number Sira 09ATEX3251X Issue 1

15 **SPECIAL CONDITIONS FOR SAFE USE** (denoted by X after the certificate number)

15.1 If terminated in the hazardous area, the flying lead shall be installed in an appropriately-certified enclosure. An example would be termination inside a flameproof enclosure via a suitable certified flameproof gland.

15.2 The threshold power of the antenna shall be limited to 2 (two) watts when the antenna gain is taken into account. Programmable or software control intended for setting by the user is not permitted.

16 **ESSENTIAL HEALTH AND SAFETY REQUIREMENTS OF ANNEX II** (EHSRs)

The relevant EHSRs that are not addressed by the standards listed in this certificate have been identified and individually assessed in the reports listed in Section 14.2.

17 **CONDITIONS OF CERTIFICATION**

17.1 The use of this certificate is subject to the Regulations Applicable to Holders of Sira Certificates.

17.2 Holders of EC type-examination certificates are required to comply with the production control requirements defined in Article 8 of directive 94/9/EC.

17.3 A dielectric strength test at 500 Vrms, in accordance with EN 60079-7 clause 7.1, shall be carried out on all units manufactured.

17.4 The manufacturer shall provide the necessary information in order that the user can meet the Condition of Certification associated with this equipment with regards to the antenna not exceeding a threshold power of 2 (two) watts.

This certificate and its schedules may only be reproduced in its entirety and without change.

Sira Certification Service
Rake Lane, Eccleston, Chester, CH4 9JN, England
Tel: +44 (0) 1244 670900
Fax: +44 (0) 1244 681330
Email: info@siracertification.com
Web: www.siracertification.com

Certificate Annexe

Certificate Number: Sira 11ATEX3100X

Equipment: iANT10x xx.xx xHz Omni-Directional Antenna

Applicant: Extronics Ltd

Issue 0

Drawing No.	Sheets	Rev.	Date (Sira stamp)	Title
314185	1 of 1	3	03 Mar 11	iANT10x Label

This certificate and its schedules may only be reproduced in its entirety and without change.

Form 94XX Issue 1

Sira Certification Service
Rake Lane, Eccleston, Chester, CH4 9JN, England
Tel: +44 (0) 1244 670900
Fax: +44 (0) 1244 681330
Email: info@siracertification.com
Web: www.siracertification.com

IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification Scheme for Explosive Atmospheres
for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.:	IECEx SIR 11.0045X	Issue No.:0	Certificate History:
Status:	Current		
Date of Issue:	2011-03-07	Page 1 of 3	

Applicant: **Extronics Limited**
Meridian House
Rice street
Congleton
Cheshire
CW12 1PG
United Kingdom

Electrical Apparatus: **IANT10x xx.xx xGHz Omni-Directional Antenna**
Optional accessory:

Type of Protection: **Increased Safety and Dust**

Marking: **Ex e IIC T5 Gb Ta = -40°C to +50°C**
Ex t IIIC T85°C Db IP66

Approved for issue on behalf of the IECEx Certification Body: D R Stubbings BA MIET

Position: Certification Manager

Signature: (for printed version)

Date: 2011-03-07

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the Official IECEx Website.

Certificate issued by:
SIRA Certification Service
Rake Lane
Eccleston
Chester
CH4 9JN
United Kingdom

sira CERTIFICATION

IECEx Certificate of Conformity

Certificate No.: IECEx SIR 11.0049X

Date of Issue: 2011-03-07 Issue No.: 0

Page 2 of 3

Manufacturer: **Extronics Limited**
Meridian House
Rice street
Congleton
Cheshire
CW12 1PB
United Kingdom

Manufacturing location(s)

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

STANDARDS:
The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0 : 2007-10 Edition: 5	Explosive atmospheres - Part 0: Equipment - General requirements
IEC 60079-31 : 2008 Edition: 1	Explosive atmospheres – Part 31: Equipment dust ignition protection by enclosure "t"
IEC 60079-7 : 2006-07 Edition: 4	Explosive atmospheres - Part 7: Equipment protection by increased safety "e"

This Certificate does not indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:
A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in

Test Report:

GB/SIR/ExTR11.0053/00

Quality Assessment Report:

GB/SIR/QAR09.0025/0*

IECEx Certificate of Conformity

Certificate No.: IECEx SIR 11.0045X

Date of Issue: 2011-03-07 Issue No.: 0

Page 3 of 3

Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

The antenna comprises a single, copper-plated, steel conductor running along the axis of a cylindrical housing that is made from a non-conducting plastic, the central conductor acts as a radiating element for the transmission of radio frequency radiation. The antenna is supplied with an integral flying lead of co-axial cable

The Manufacturer shall comply with the following condition of manufacture:

1. A dielectric strength test at 500 Vrms, in accordance with IEC 60079-7 clause 7.1, shall be carried out on all units manufactured.
2. The manufacturer shall provide the necessary information in order that the user can meet the Condition of Certification associated with this equipment with regards to the antenna not exceeding a threshold power of 2 (two) watts.

CONDITIONS OF CERTIFICATION: YES as shown below:

1. If terminated in the hazardous area, the flying lead shall be installed in an appropriately-certified enclosure. An example would be termination inside a flameproof enclosure via a suitable certified flameproof gland.
2. The threshold power of the antenna shall be limited to 2 (two) watts when the antenna gain is taken into account. Programmable or software control intended for setting by the user is not permitted.

Hazardous Area Specialists

EC Declaration of Conformity

Extronics Ltd, Meridian House, Roe street, Congleton, CW12 1PG UK

Declare under sole responsibility that the products;

iANT100-*-* Omni Directional Zone 1/21 & Zone 2/22 LAN Base Antenna

iANT101-*-* Omni Directional Zone 1/21 & Zone 2/22 LAN Base Antenna

To which this declaration relates is in accordance with the provision of the following directives

Equipment intended for use in Potentially Explosive Atmospheres Directive 94/9/EC

And is in conformity with the following standards or other nominative documents

IEC 60079-0 : 2007-10 Edition: 5	Explosive atmospheres – Part 0:Equipment - General requirements
IEC 60079-31 : 2008 Edition: 1	Explosive atmospheres – Part 31: Equipment dust ignition protection by enclosure 't' Increased safety "e"
IEC 60079-7 : 2006-07 Edition: 4	Explosive atmospheres – Part 7: Equipment protection by increased safety "e"
EN 60079-0:2009	Explosive atmospheres - Part 0: Equipment - General Requirements
EN 60079-7:2007	Explosive atmospheres - Part 7: Equipment protection by increased safety 'e'

Signed Date - 27/06/11

Nick Saunders
Technical Services Manager

8 Manual Revision

Revision	Description	Date	By
1	Original Copy	24/08/2006	David Revell
2	Added Gland Details	25/05/07	Nick Saunders
3	Added iANT101 Version	22/08/08	Nick Saunders
4	Added Mounting Bracket Section	10/12/08	James Eastwood
5	New ATEX & IECEx Certificates	03/05/2011	Nick Saunders

Nick Saunders

Digitally signed by Nick Saunders
DN: CN = Nick Saunders, C = US, O = Extronics, OU = Extronics
Reason: I am approving this document
Date: 2011.07.04 22:04:14 +01'00'